STEAM GENERATOR BURNER INSPECTION - UNIT #1
November 1989 Outage

OBSERVATIONS AND WORK ACCOMPLISHED

An inspection was conducted to establish the condition of the steam generator burners by IPSC Technical Services personal. The inspection was performed from the windbox only since access to the fireside was unavailable. Burner inspection observations and work completed during the outage are presented below.

Conical Coal Diffusers

The plasma torch style conical coal diffusers were replaced on pulverizer burner rows 1B and 1G with standard design conical diffusers. The plasma torch ignition system has been removed and a standard lighter arrangements installed.

Burner Casing Rings

The burner casing ring is attached to the water wall and is designed to form an airtight seal between the water wall and the outer register throat sleeve. The inspection revealed that virtually all of the casing rings had broken attachment welds. In addition, the rope packing was missing from between the casing ring and sleeve. The burners were all checked for damage but the casing ring attachment welds were not repaired during the outage.

This particular problem has been noted during pervious inspections. IPSC has approached B&W with concerns about the prevalence of broken welds and the effect on burner performance. B&W Field Service determined the broken welds are not structural and do not impact burner performance.

Outer Register Assembly

The outer register assembly on burner 1C3 was found in an unsatisfactory condition. The welds between the outer register assembly cross bracing and the frame plates were cracked. Misalignment of the register frame plates had bound the hinges of the register vanes preventing operation of the vanes. The register frame plates were realigned and the cracked welds repaired to provide for the free movement of the vanes.

The inspection reveled that burner damage caused by excessive temperatures is continuing to occur. This damage is evidenced by permanent warpage of the register vanes and back plates.

During future inspections, the register cross bracing should be carefully inspected for cracking and warping.

Lighters and Shrouds

Sagging lighter shrouds continue to be a problem. Sagging shrouds prevent the lighters from extending or retracting properly and present a significant operational problem.

The modification made during a previous outage appears to have helped the problem. The remaining shrouds should be aligned properly and the additional supports added to maintain shroud position during operation.

Burner Air Register Position

The burner inner (spin) and outer register positions were documented during the inspection. The spin vane back plates were set to the appropriate position prior to the completion of the outage. Burner register linkages were checked for proper action and fly ash accumulations removed where possible.

Burner Performance Testing

Burner turndown testing was scheduled to be completed after the unit was returned to service to verify proper burner operation.

RECOMMENDATIONS

Burner Inspections

The burner fronts should be inspected from the fireside of the boiler during the next availible outage. Conical coal diffusers should be inspected for erosion, wear, and support bracket cracking. Loss of a diffuser during operation could result in poor flame quality and loss of flame. The fireside inspection should become a regularly scheduled outage activity.

Throat Sleeve Casing Rings And Seal

All throat sleeve casing ring welds should be reattached and rope packing or other acceptable means of providing an airtight

seal installed. This will prevent air from bypassing the burner and adversly affecting boiler performance.

The problem of burners overheating could be addressed by lowering the temperature of the burner front on out-of-service burners.

Lighter Shrouds

The lighter shrouds should be inspected closely during future inspections for weld detachment and broken U-straps. This should prevent the shrouds from drooping or detaching during boiler operation.

Burner Air Registers

Both inner (spin) and outer register vanes and linkages should be checked to verify proper operation during the next outage. Particular attention should be given to the outer register assembly weld attachments. Spin vane backplate and outer register vane positions should be taken and compared to the previous outage final positions to determine if changes have occured.